



# WRE Modeling: Next steps

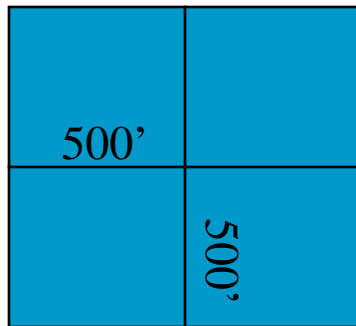
- Re-size model grid to 500'
- Model driven ET
- Change extent of Qva within Judd Creek Basin
- Change Quartermaster Harbor

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# Model Grid

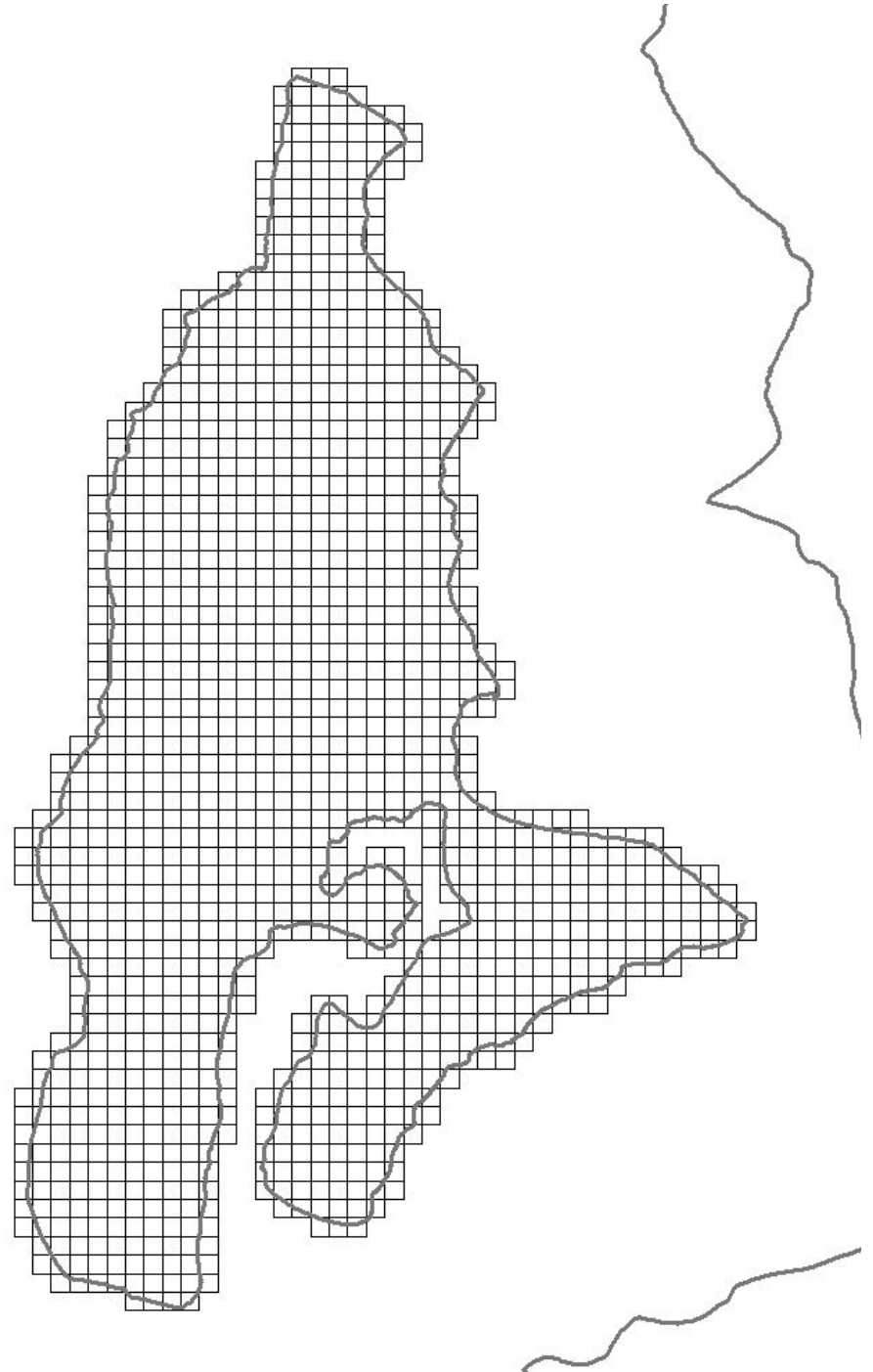
41 columns, 67 rows  
1270 active cells per  
layer (of possible 2747)  
Each cell 1000' x 1000'

**1000 feet**



Change increases the  
number of grids by 4

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# Model Driven ET

■ ET-Evaporation/transpiration

■ Land cover

■ Geology

- affects recharge

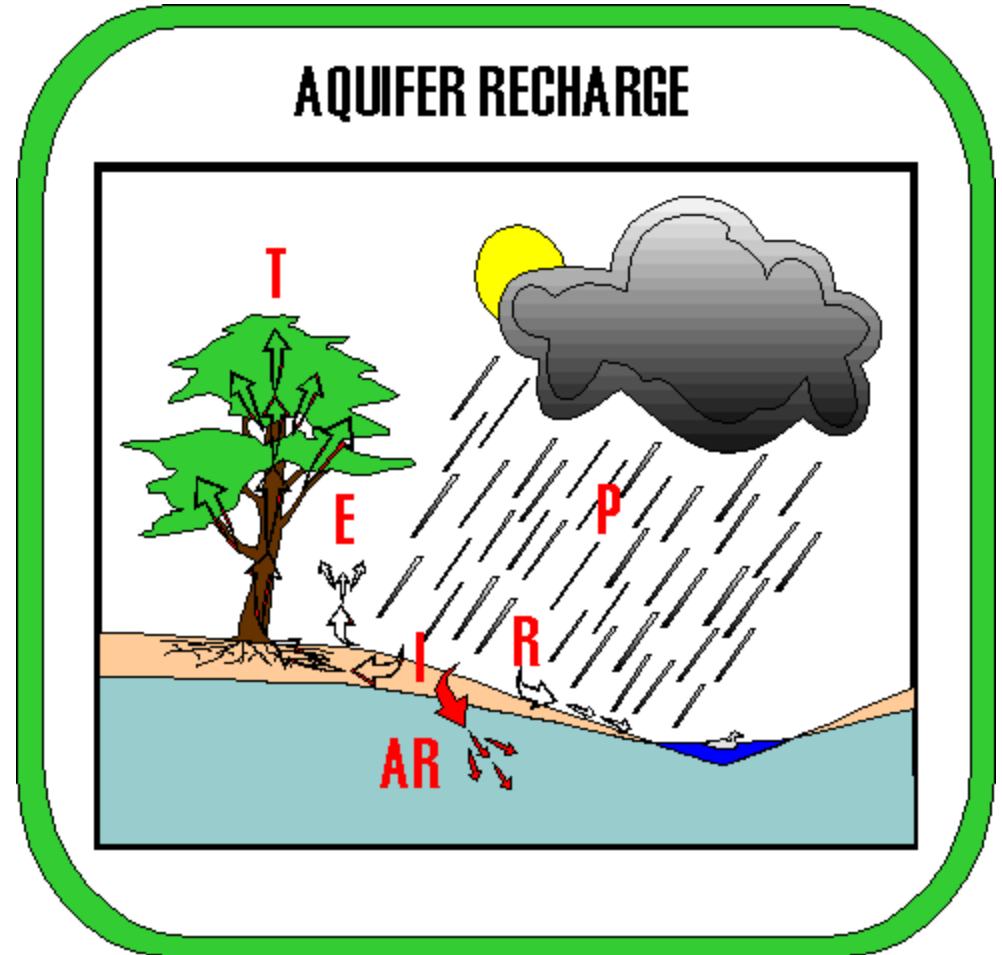
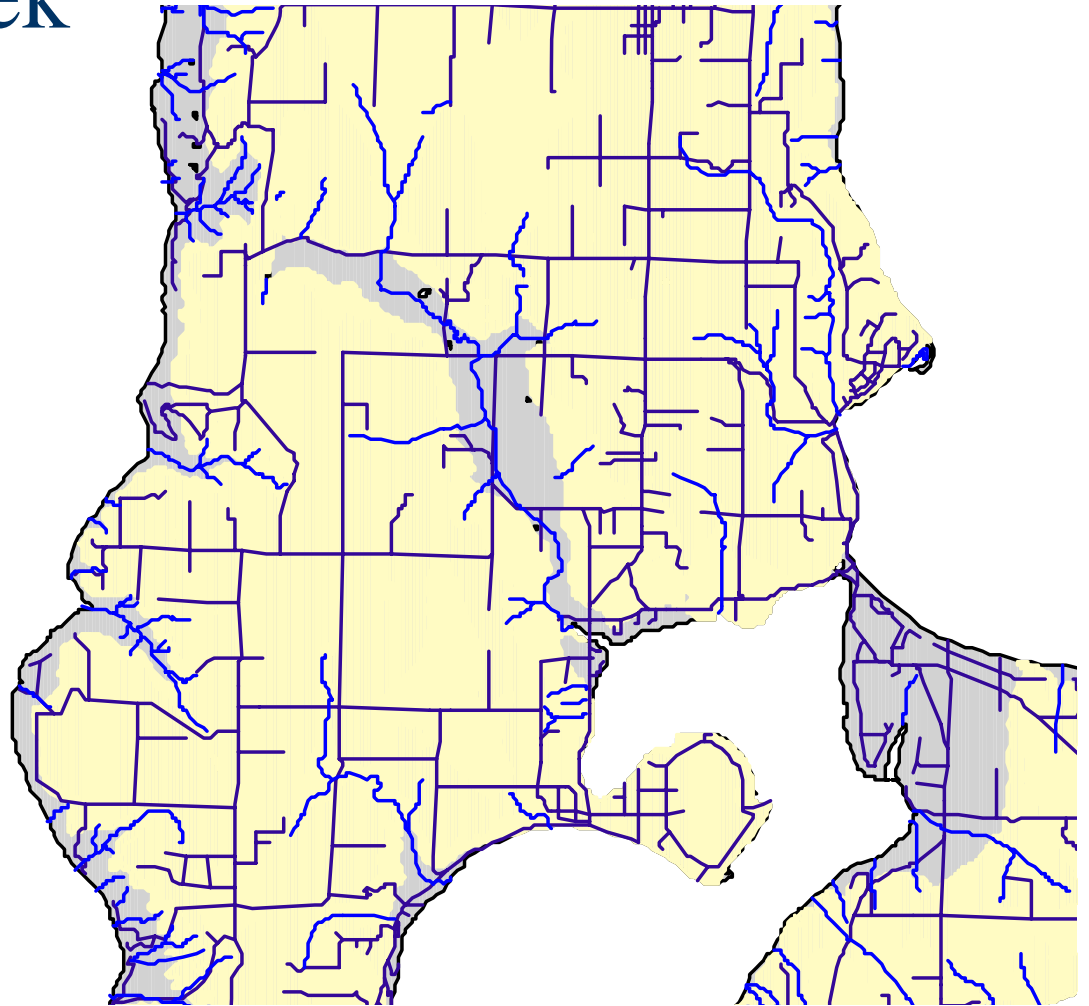


Image from NJGS Aquifer Recharge Project

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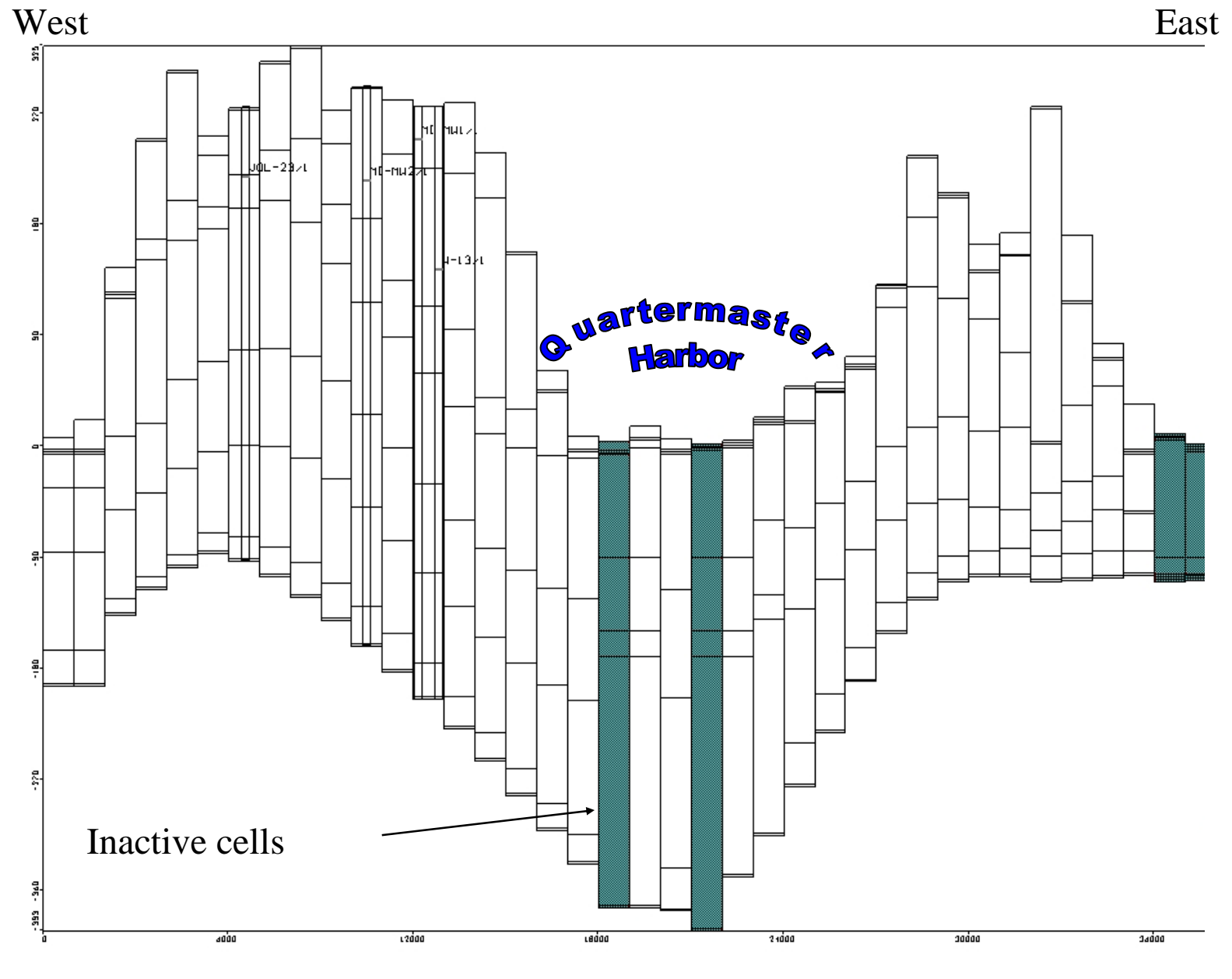
# Qva in Judd Creek Basin

Yellow = Qva extent  
Gray = VMI outline  
Light Blue = Creeks  
Dark Blue = Roads

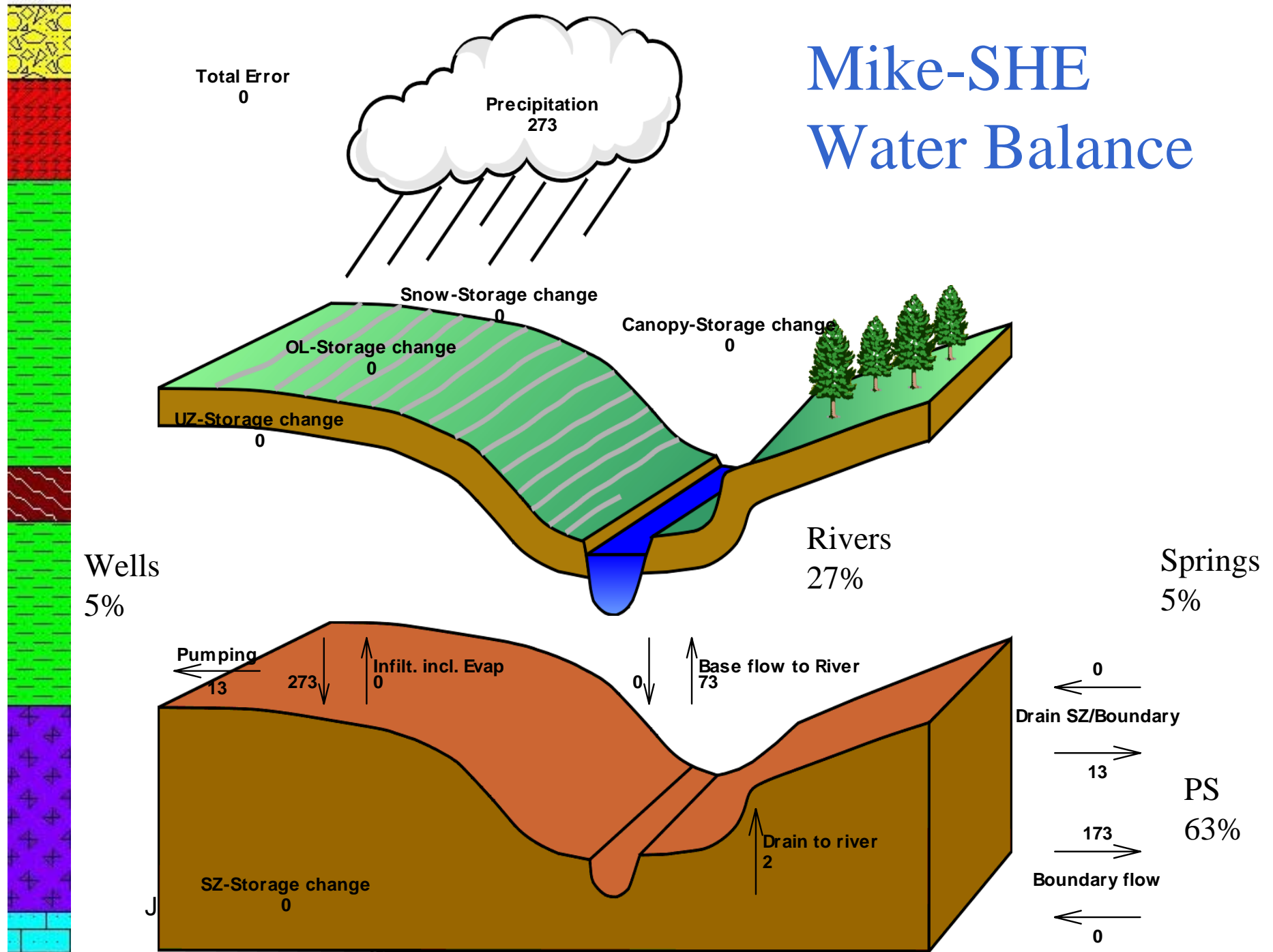


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# Cross section (W-E) near Burton and Maury Is.



# Mike-SHE Water Balance





# Water Balance - comparison

	WRE	Mike-She	Carr	GWMP
recharge (gpm)	16455		6107	20960
outflows				
Puget sound	80%	63%	20%	38%
Streams	12%	27%	80%	62%
Wells	5%	5%	--	--
Springs	3%	5%	--	--

Adapted from VMI WRE Phase I GW Model Report Table 4-2

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# WRE Modeling: Future Scenarios

- Population growth – effects of increased pumping (no new wells).
- Summer low flow – effects of withdrawals focused on May-October (no new wells).
- Climate Change – effects of changing rainfall and temperature on recharge.
- Build-Out – New exempt wells
  - Utilizing Bob Powell's build-out for locations
  - *Draft* VMI Green Print Focus Areas

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# Quarterly Project Status

## July 25, 2007

### Vashon-Maury Island Water Resources Evaluation

July 25, 2007



# Quarterly Review

- Ongoing monitoring overview
- WRE report update
- Modeling update
- Budget
- Next Quarter

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# Island Monitoring

- Precipitation & Stream gauging
  - Plan to telemetry some sites
  - Web presentation of data
- WL survey continuing
  - 30 sites
- Stream WQ sampling
  - 7 sites

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# Island Monitoring cont'd

- Water Quality monitoring (July-August)
  - Environmental indicators at 19 long-term sites
    - Arsenic, Chloride and Nitrate+Nitrite
  - Baseline parameters at monitoring wells
    - Inorganics, Nutrients & Metals
      - Cl, F, SO<sub>4</sub>, Si, Tot P, Tot N, N+N, NH<sub>3</sub>, Ortho P plus metals

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# WRE Reports Update

- Next report
    - Workplan update
  - Completed:
    - Final report to Ecology on Watershed Grant activities
    - WRE Data Reports
      - Available via the web
- <http://dnr.metrokc.gov/wlr/wq/vashon-island/index.htm>

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# WRE Phase II Modeling

- Earlier conversation about Next Steps and Scenarios
- Timeline:
  - Next Steps : August – September
  - Scenarios: after completion of the Next Steps

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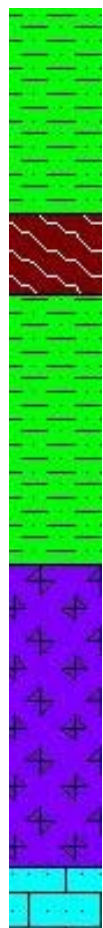
# Budget

- Project budget for 2007 is \$314,479
  - expenditures to date: \$166,917
  - 53% of budget
- Future expenditures
  - Additional Monitoring wells ~ \$117,000
  - Activity tentative scheduled for fall

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# New WRE Web page



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## Vashon-Maury Island Water Resources Evaluation

The Vashon-Maury Island Water Resources Evaluation (WRE) is a project designed to describe and assess the water resources of the island. This project will provide a better understanding of how different activities can adversely affect the island's water quality and quantity and lead to an updated, more accurate water supply budget for the island.

» Learn [more details](#) about the project or to read the project [workplan](#).

### Project Data

The WRE project is collected a variety of data to help assess the water resources on Vashon-Maury Island (VMI). The [Project Documents](#) page has a variety of reports relating to on-going monitoring and modeling.

Groundwater data is available [on-line](#). Water quality and water level data can be searched via a map or by a text filter. Here's a [map](#) of groundwater sampling sites in 2006.

Stream and precipitation data are also [available](#). Selecting 'WRIA 15' and check 'active only' will yield eleven (11) gage sites. Here's a [map](#) of those sites.

» [Project News](#) is an e-mail list about project information.

### Vashon Groundwater Education

This project works closely with the [VMI Groundwater Protection Committee](#) to broaden the understanding of the water resources of the island.

Here are several examples of VMI specific education material available to islanders:

- » [Balancing Water](#) (439K pdf)
- » [Garden Green Drink Clean](#)
- » [Waterfacts](#)



### Care to join us?

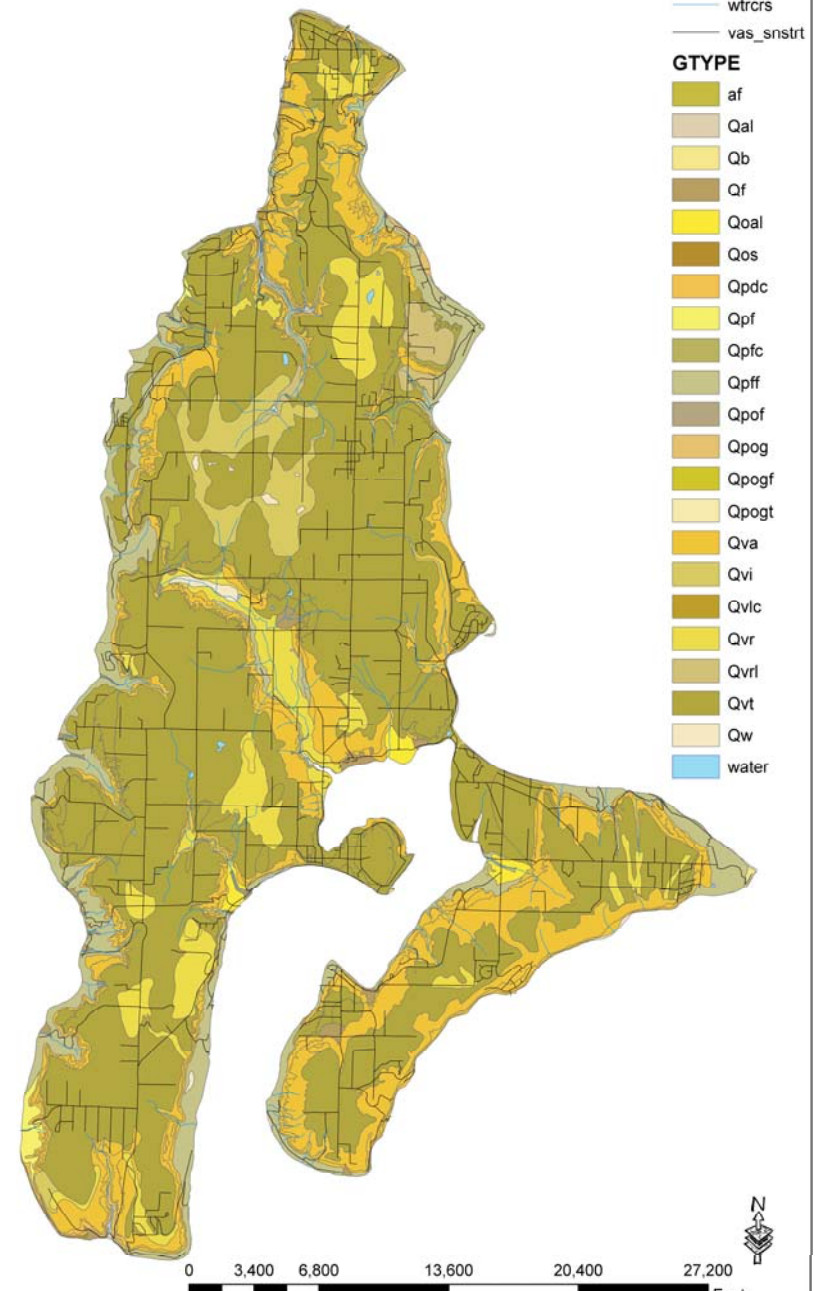
[Groundwater Protection Committee](#) meetings are open to the public and held quarterly on the 4th Wednesday of the month (Jan/Apr/Jul/Oct).

<http://dnr.metrokc.gov/wlr/wq/vashon-island/index.htm>

# Next Quarter

- WQ sampling
  - EI and MW sites
- Continue working with UW to publish VMI geology map
- Continued activities
  - Gauging
  - Modeling
  - WL
  - New MW wells

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# VMI Watershed Grant Overview

***Task 1: Identify all PWS in the target areas***

***Task 2: Survey the PWS within these areas***

***Task 3: Assess monitoring efforts on VMI as compared to the Watershed Plan***

***Task 4: Determine additional monitoring needed to better monitor implementation of the Watershed Plan***

***Task 5: Augment monitoring as identified***

***Task 6: Administration***

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# Grant Overview con't

## **Task 4: Additional monitoring:**

- Organic sampling of 5 (selected) sites
  - CI-pest; OP-pest; CI-herb; EDCs
  - Sampled in March
- Exempt Well Flow Determination
  - Ordered 18 meters
  - 8 volunteers recording water usage
  - Work done by Island Pump & WSS (Bob Seibold)

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# Grant - Exempt Well Flow

Range of GPD (gallons per day)

18.2 to 632.3

July			
date	meter	# of days	GPD
29-Jun	30910	29	435.9
2-Jul	17894	30	117.8
12-Jul	10240	113	90.6
17-Jul	2850	28	18.2
1-Jul	24450	30	632.3
5-Jun	6680	47	142.1
12-Jul	46007	84	547.7
16-Jul	32980	21	522.4

~Weekly readings of 1 site

<i>date</i>	<i>meter</i>	<i># days</i>	<i>GPD</i>
10-May	2410	10	234.0
23-May	5900	13	268.5
28-May	7380	5	296.0
12-Jun	14340	15	464.0
18-Jun	17250	6	485.0
25-Jun	22010	7	680.0
9-Jul	26810	14	342.9
16-Jul	32980	7	881.4

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# Grant Overview cont'd

## **Task 5: Augment monitoring:**

- Environmental Indicators and As speciation
- 11 sites; 8 As speciation samples
- 1 site with As 43  $\mu\text{g/L}$

## **Task 6: Administration**

- June 30, 2007: Submit final report

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# Grant Budget

## ■ Grant Budget by task:

- Task 1
  - Budget: \$300
  - Spent: \$300
- Task 2
  - Budget: \$5,100
  - Spent: \$5,100
- Task 3
  - Budget: \$0
  - Spent: \$ 0...funded by WRE project
- Task 4
  - Budget: \$9,100 Spent: \$11,441;
    - \$1,737 on meter equipment,
    - \$1,836 on meter installation
    - \$7,968 on water quality analyses.

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# Grant Budget – cont'd

## ■ Grant Budget by task:

### – Task 5

- Budget: \$500 Spent:
- \$500 on water quality analyses.

### – Task 6

- Budget: \$0
- Spent: \$0...funded by WRE project

## ■ Totals

- Budget total: \$15,000
- Spent total: \$17,341; the additional \$2,341 funded by the WRE project.

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